



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,802	10/16/2003	Phillip A. Hetherington	11336/592 (P3131USP)	9753

757 7590 08/03/2007  
BRINKS HOFER GILSON & LIONE  
P.O. BOX 10395  
CHICAGO, IL 60610

EXAMINER
----------

HARPER, V PAUL

ART UNIT	PAPER NUMBER
----------	--------------

2626

MAIL DATE	DELIVERY MODE
-----------	---------------

08/03/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/688,802	<b>Applicant(s)</b> HETHERINGTON ET AL.	
	<b>Examiner</b> V. Paul Harper	<b>Art Unit</b> 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 6/28/2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-23 and 28-35 is/are allowed.
- 6) ☒ Claim(s) 24-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 24, 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al. (Patent Application Publication US 2003/0040908), hereinafter referred to as Yang, in view of Buchele (US Patent Application Publication 2003/0151454) hereinafter referred to as Buchele.

Regarding **claim 24**, Yang discloses a noise suppression system for speech.

Yang's teachings include the following:

- converting a time varying signal to a complex spectrum (Fig. 4, FFT time domain to frequency domain);
- estimating a background noise (§§07, undesired component [including wind noise] is detected; §§ 08-10, describe various noise analysis techniques);
- dampening the wind buffet from in input signal to obtain a noise-reduced signal (§§06, "...to generate a desired output signal having predominantly speech").

Art Unit: 2626

But Yang does not specifically teach “detecting the wind buffet when a high correlation exists between a line and a portion of the input signal.” However, the examiner contends that this concept was well known in the art, as taught by Buchele.

In the same field of endeavor, Buchele discloses an adaptive speech filter to suppress ambient low frequency noise associated with wind and the use of a peak detector circuit that can respond to wind gusts (i.e., when the input signal crosses a line it detects a wind gust) and effectively suppress them (¶s, 34, and 40).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Yang by specifically providing the features, as taught by Buchele, because it is well known in the art at the time of invention for the purpose of being responsive to rapidly changing circumstances (Buchele, ¶11) and thus maintaining quality speech communications).

Regarding **claim 26**, Yang in view of Buchele teaches everything claimed, as applied above (see claim 24). In addition, Yang teaches “the act of dampening the wind buffet comprises substantially removing the wind buffet from the input signal. (¶29, “Noise suppression unit ...removes noise from the signal...” “can remove non-stationary noise” i.e., wind buffet).

Regarding **claim 27**, Yang discloses a noise suppression system for speech. Yang’s teachings include the following:

- converting a time varying signal to a complex spectrum (Fig. 4A, FFT converts waveform to frequency domain);;
- estimating a background noise (Fig. 4A, ¶s 40-42, X is used to make estimates of the mostly noise signal);
- removing the wind buffet from the input signal to obtain a noise-reduced signal (¶06, "...to generate a desired output signal having predominantly speech").

But Yang does not specifically teach "detecting the wind buffet when a high correlation exists between a line and a portion of the input signal." However, the examiner contends that this concept was well known in the art, as taught by Buchele.

In the same field of endeavor, Buchele discloses an adaptive speech filter to suppress ambient low frequency noise associated with wind and the use of a peak detector circuit that can respond to wind gusts (i.e., when the input signal crosses a line it detects a wind gust) and effectively suppress them (¶s, 34, and 40).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Yang by specifically providing the features, as taught by Buchele, because it is well known in the art at the time of invention for the purpose of being responsive to rapidly changing circumstances (Buchele, ¶11) and thus maintaining quality speech communications).

2. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yang in view of Buchele and further in view of Vilmur.

Regarding **claim 25**, Yang in view of Buchele teaches everything claimed, as applied above (see claim 24). But Yang does not specifically teach "the act of estimating the background noise comprises estimating the background noise when a transient is not detected." However, the examiner contends that this concept was well known in the art, as taught by Vilmur.

In the same field of endeavor, Vilmur discloses a noise suppression system where a background update decision is prevented if transient noise is present (col. 6, lines 3-11 and lines 24-39).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Yang by specifically providing the features, as taught by Vilmur, because it is well known in the art at the time of invention for the purpose updating the background noise model when only background noise is present.

### ***Response to Arguments***

3. The following arguments submitted by the Applicant on 6/28/2007 have been considered but they are not persuasive.

4. Applicant asserts on page 14:

Amended independent Claim 24 recites a method of dampening a wind buffet from an input signal including the step of detecting a wind buffet when a high correlation exists between a line and a portion of an input signal. The Yang-Buchele combination does not teach this feature and the Assignee respectfully submits that this feature was not well known in the art. The Office Action asserts that ¶¶ 34 and 40 of Buchele show

Art Unit: 2626

this feature but the cited paragraphs disclose a peak detector circuit that helps to suppress single wind gusts when a SPL exceeds a certain threshold. (Buchele, ¶¶ 34, 40). Specifically, the Office Action states that the peak detector circuit of Buchele can detect a wind gust "when the input signal crosses a line." (Office Action, page 15). The Yang-Buchele combination does not teach or suggest *detecting a wind buffet when a high correlation exists between a line and a portion of an input signal*. Instead, Buchele only discloses that if the peak detector detects that the SPL of a wind gust is above a threshold, then the adaptive filter is fully engaged. (Buchele, ¶¶ 34, 40). There is no disclosure or suggestion of a correlation analysis even if the asserted combination is made. Accordingly, Claims 24 and 26 are also patentable for at least these reasons. (Italics added)

The examiner notes that the term "correlation" as stated in the *American Heritage Dictionary of the English Language* is "[a] causal, complementary, parallel, or reciprocal relationship, especially a structural, functional, or qualitative correspondence between two comparable entities". In this case the claim language is very broad ("a high **correlation** exists between **a line** and **a portion** of the input signal") and the examiner maintains that the teachings of Buchele correspond. Buchelle teaches the detection of wind noise levels at low frequencies and that "a peak detector circuit can respond to single wind gusts" (¶40) where "a portion of the input signal" can correspond to "at low frequencies" and "a high correlation exists between a line..." corresponds to the detection of wind noise levels. Also, the use of a peak detector circuit implies that the input signal meets a "line shape" criterion (i.e. correlates) resulting in a detection.

Arguments similar to the ones used above apply regarding claim 27.

***Allowable Subject Matter***

5. Claims 1-23, and 28-35 are allowed.

Regarding claim 1 and 28, it is noted that the closest prior art of record, Yang et al. (Patent Application Publication US 2003/0040908) discloses a noise suppression system that detects and removes noise including noise generated by wind, but Yang et al. does not teach a first noise detector that is adapted to detect a wind buffet from an input signal by modeling (claim 1) or the use of signal analysis logic that models a portion of the sound waves that are associated with the wind to detect a wind buffet (claim 28). Thus, independent claims 1 and 28 are allowable over the prior art of record because the cited prior art alone or in combination, does not fairly suggest or disclose the claimed combination of features.

Regarding claims 16 and 23, it is noted that the closest prior art of record, Yang et al. (Patent Application Publication US 2003/0040908) discloses a noise suppression system that detects and removes noise including noise generated by wind, but Yang et al. does not teach the use of a noise detector coupled to the background noise estimator, the wind noise detector configured to apply the wind buffet line fitting rules to a line fit to a portion of the input signal in the frequency domain to obtain a constrained line adhering to the wind buffet line fitting rules, and automatically identify a noise associated with the wind based on the constrained line (claim 16) or a wind noise detector coupled to the background noise estimator, the wind noise detector configured to fit a line to a portion of an input signal, and apply the wind buffet line fitting rules to



Art Unit: 2626

the line to obtain a constrained line adhering to the wind buffet line fitting rules (claim 23). Thus, independent claims 16 and 23 are allowable over the prior art of record because the cited prior art alone or in combination, does not fairly suggest or disclose the claimed combination of features.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to V. Paul Harper whose telephone number is (571) 272-7605. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

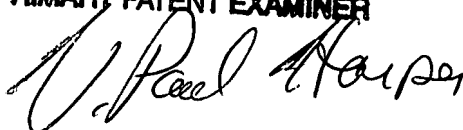
Art Unit: 2626

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

7/18/2007

VPH

V. PAUL HARPER  
PRIMARY PATENT EXAMINER

A handwritten signature in black ink, appearing to read "V. Paul Harper", written over the printed name and title.